

Unit 12

Day 5

Piecewise-Defined Functions

Section 3.5 from textbook

Graph the following piecewise function.

$$f(x) = \begin{cases} x^2 - 3, & \text{if } x < 0 \\ 1 & \text{if } 0 < x \leq 2 \\ 2x - 3 & \text{if } x > 2 \end{cases}$$

$$f(0) = 0^2 - 3 = -3 \quad (0, -3) \circ$$

$$f(-1) = 1 - 3 = -2 \quad (-1, -2)$$

$$f(-2) = 1 \quad (-2, 1)$$

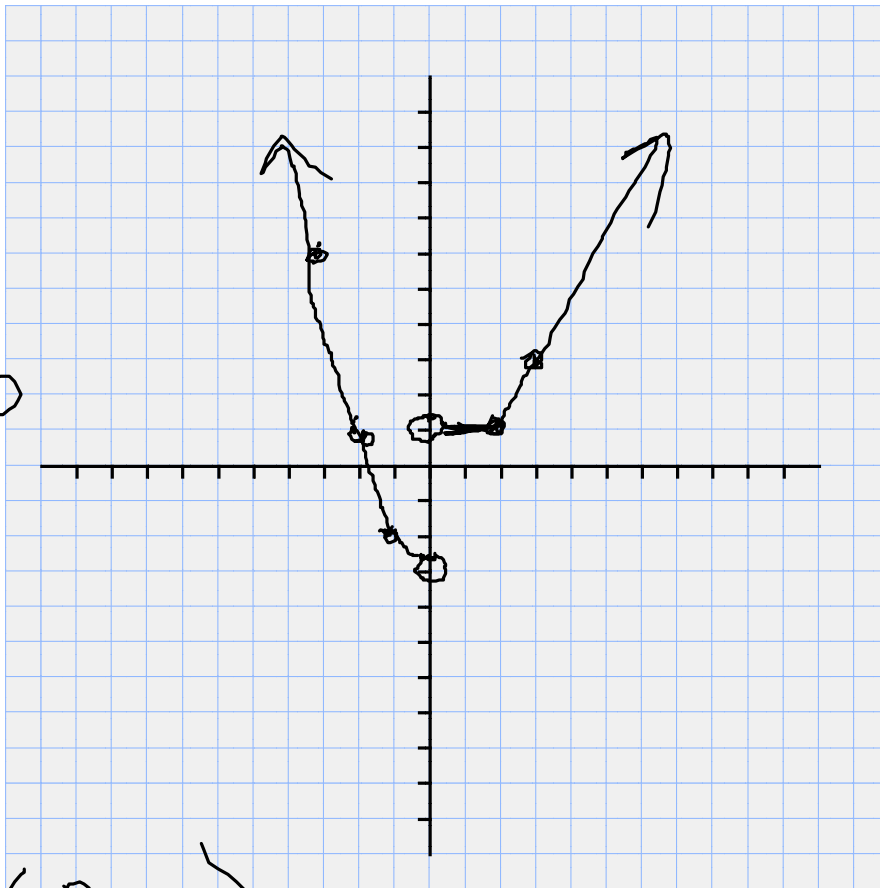
$$f(-3) = 6 \quad (-3, 6)$$

$$f(2) = 2(2) - 3 = 1 \quad (2, 1) \circ$$

$$f(3) = 2(3) - 3 = 3 \quad (3, 3)$$

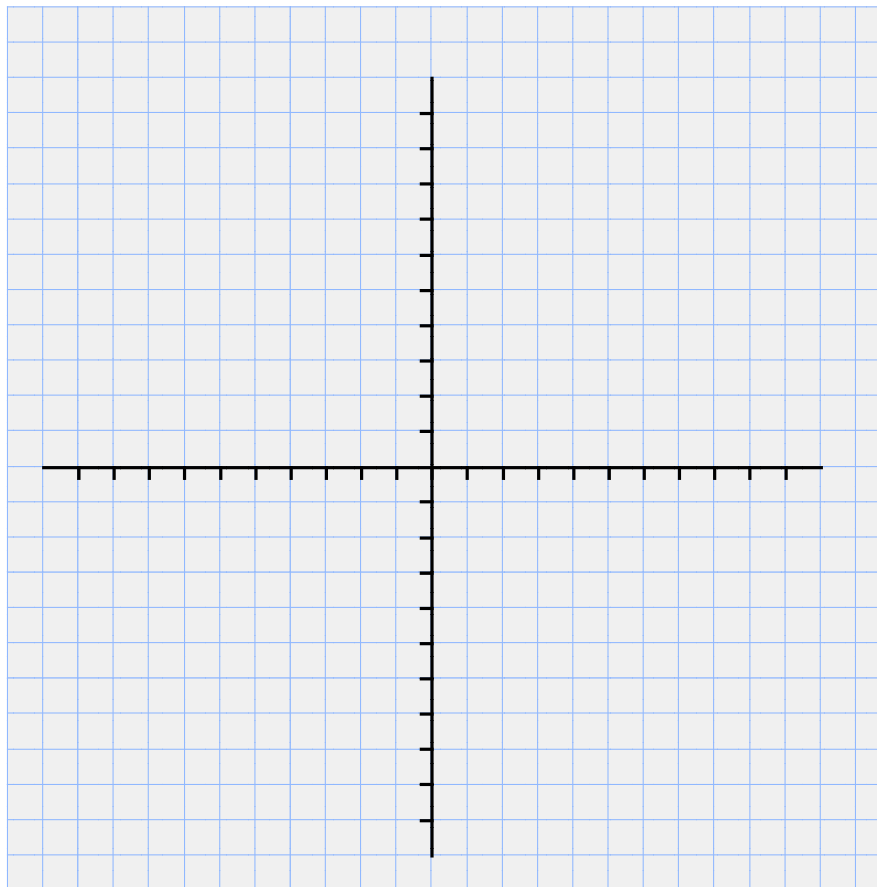
State the domain and range:

$$D: (-\infty, 0) \cup (0, \infty) \quad R: (-3, \infty)$$



Graph the following piecewise function:

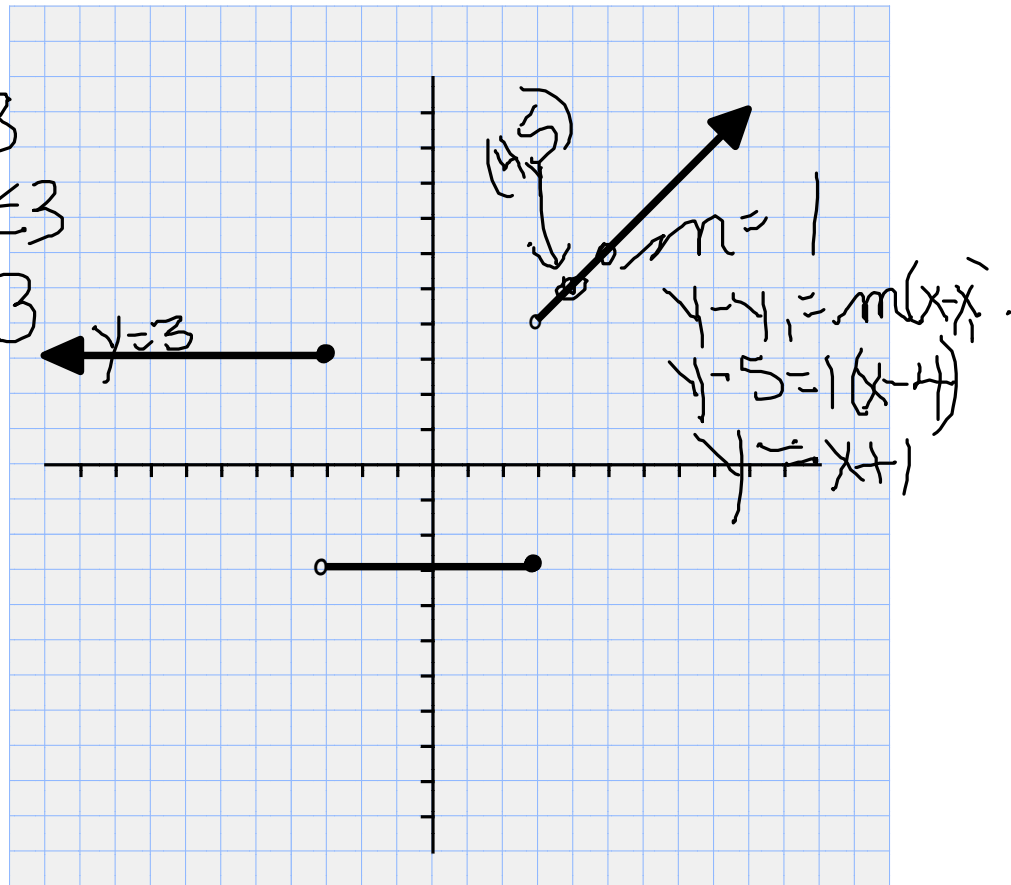
$$f(x) = \begin{cases} -2x, & \text{if } x < -2 \\ 2x - 1 & \text{if } -2 \leq x \leq 1 \\ -x & \text{if } x > 1 \end{cases}$$



State the domain and range:

Give the rule for the following piecewise function. State the domain and range.

$$g(x) = \begin{cases} 3 & x \leq -3 \\ -3 & -3 < x \leq 3 \\ x+1 & x > 3 \end{cases}$$



$$g(x) = \begin{cases} -2x, & \text{if } x < -2 \\ 2x - 1 & \text{if } -2 \leq x \leq 1 \\ -x & \text{if } x > 1 \end{cases}$$

For the above piecewise function, find

$$\text{a) } f(-2) = 2(-2) - 1 = -5$$

$$\text{b) } f(0) = 2(0) - 1 = -1$$

$$\text{c) } f(5) = -5$$

$$\text{d) } \sqrt{f(-8)} = \sqrt{-2(-8)} = \sqrt{16} = 4$$

HOMEWORK:

p. 231: 41-54

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p. 231: 41-54

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Basic Functions

Section 3.5 from textbook

GREATEST INTEGER FUNCTION

The greatest integer function, $f(x) = \llbracket x \rrbracket$, pairs every real number x with the greatest integer that is less than or equal to x .

Examples:

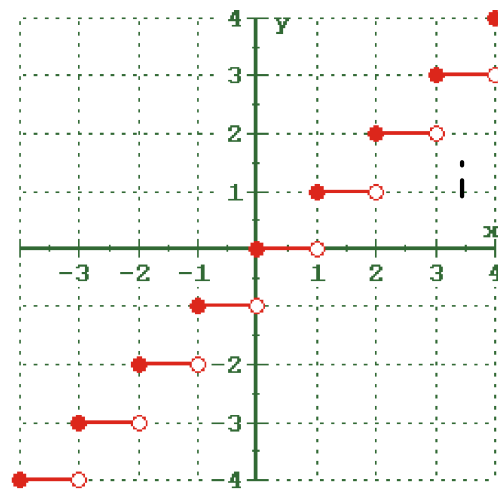
$$\llbracket 8.4 \rrbracket = 8$$

$$\llbracket -5 \rrbracket = -5$$

$$\llbracket \pi \rrbracket = 3$$

$$\llbracket -6.9 \rrbracket = -7$$

The graph of the greatest integer function looks like this:



Complete Basic Graphs Worksheets at seats.

Link to [grapher.app](#) for

Library of Functions

If time do a table of value problem from p 231

HOMEWORK:

Complete worksheets from class

p. 230-231: 7-14 (all)

16-30 (e) use a table of values